

Atty's Docket: 101215-117

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Applicants request that this be considered a petition therefore. Please charge the required fee to Deposit Account No. 14-1263.

ADDITIONAL FEES

Please charge any further insufficiency of fees, or credit any excess to Deposit Account No. 14-1263.

REMARKS

Claims 9-21 are pending in the application. All claims have been rejected under various statutory provisions.

Claims 9-10, and 12-16, and 19-21 have been amended. Claim 11 has been canceled. It is believed that the amendments and the ensuing remarks overcome the rejections.

The amendments raise no new matter, nor issues that would require further searching of the prior art. In addition, the thrust of the amendments derive in large part from Examiner's comments and adopt various implied suggestions.

Further, Applicants and the undersigned, respectfully assert their *bona fide* belief that the claims are now in condition for allowance.

The rejections will be discussed in the sequence in which they appear in the office action.

New Matter

Examiner apparently believes that various phrases in new claims 9, 11 and 21 are not adequately supported by the specification and original claims. Applicants believe that the foregoing amendments and the following remarks overcome these rejections.

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1. Claims 9, 21 — *"At least one carbon-containing compound"* — The claims have been amended to recite *"an aqueous leaching fluid consisting of at least one sulfur-containing amino acid...."* Support for this can be found at page 3, first paragraph; and original claim 1.
2. Claims 9, 21 — *"Homocysteine, and derivatives thereof"* — Examiner has indicated that support can be found only for the amides and esters of homocysteine. However, the specification discloses on page 3, last paragraph, *"the leaching fluid may include both the Thiobacillus species and the sulfur-containing amino acids, or derivatives thereof."* This is re-stated on page 4, 4th paragraph. In view of this support, Applicants respectfully request withdrawal of this new matter rejection.
3. Claims 9, 21 — *"Optionally, one or more salts"* — Support for the addition of salts can be found on page 3, 3rd paragraph, and is exemplified on page 6, 1st paragraph. This rejection should be withdrawn. *NO, still new*
4. Claim 9, *"wherein the bacteria contacts the sulfidic material..."*; and claim 11, *"wherein the microorganisms are added after the removal of the leaching fluid."*

Claim 9 has been amended to more clearly recite the alternative points in the process where the bacteria may be added.

Claim 11 has been canceled.

The limitation of applying the bacteria as a component of the aqueous leaching fluid or adding the bacteria to the discharging fluid (i.e., spent leaching fluid) is explicitly described, beginning on page 3, last paragraph.

Applicants respectfully request withdrawal of this new matter rejection

Lack of Enablement

Claims 9 and 21 are rejected because the specification is allegedly only enabling for *"homocysteine and amides or esters thereof,"* but not *"homocysteine and derivatives thereof."*

Examiner's rationale does not support a *prima facie* conclusion that persons of skill in the art would require undue experimentation to practice the invention. Examiner asserts without a specific line of reasoning or evidence, that a substantial portion of homocysteine derivatives exist which could not function within the leaching solution.

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Further, even accepting *arguendo* that such a portion of derivatives exists, Examiner assumes, without evidence that person's with skill in the art would not know which derivatives would not provide an operable method.

From an experimental perspective, this simple method described would provide an easy and routine test for a homocysteine derivative's appropriateness for use in the assay.

However, in order to expedite the allowance of the application, the claims have been amended to limit the derivatives to amides and esters.

In accordance, it is believed that the rejection is overcome, and should be withdrawn.

In addition, the foregoing amendments to claims 13-15 and 20 have deleted the offending terminology. Therefore, this rejection is now overcome.

Indefiniteness

Claims 10-12, 16 have been amended to substitute "bacteria" for "microorganisms." There is clear antecedent basis for "bacteria."

Claims 13, and 19-20 have been amended to overcome the rejections for lack of antecedent basis.

Prior Art Rejections

The amended claims overcome all prior art rejections.

Independent claims 9 and 21 recite a method requiring a leaching fluid consisting of sulfur-containing amino acids.... The instantly claimed method employing this fluid does not encompass the carbon-containing compounds disclosed in the references.

Withdrawal of the anticipation rejection is respectfully requested.

Neither Rusin nor Wenberg nor Liu teach or suggests a method comprising such a composition. Accordingly, they cannot anticipate the claims.

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For the same reason, Wenberg and Liu in combination do not render the claims obvious.

Thus, it is respectfully suggested that the rejections for alleged obviousness be withdrawn.

Applicants respectfully solicit withdrawal of all rejections, and allowance of the claims.

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Respectfully Submitted,

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MARK UP OF AMENDED CLAIMS

9.(Amended) A process for microbial leaching of a sulfidic material wherein bacteria of the genus *Thiobacillus* participate in the leaching process, and wherein the process comprises the steps of:

- a) preparing an aqueous leaching fluid consisting of

comprising at least one sulfur-containing amino acid carbon-containing compound,
wherein the at least one carbon-containing compound is selected from the group
consisting of cysteine, methionine, and homocysteine, and amides and
esters thereof derivatives thereof,

optionally, bacteria of the genus *Thiobacillus*,

and optionally one or more salts;

- b) contacting said fluid with the sulfidic material for a length of time sufficient to achieve leaching; and

wherein the bacteria contact the sulfidic material either as are a component of the
sulfur-containing amino acid leaching fluid prior to performing step (b), or
subsequently after removal of the sulfur-containing amino acid leaching fluid, or
both, the bacteria are added to a discharging fluid, wherein said discharging fluid
comprises the aqueous leaching resulting from step (b).

10. (amended) The process of claim 9 wherein the leaching fluid includes the microorganisms bacteria.

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11. (amended) The process of claim 9 wherein the ~~microorganisms~~ bacteria, are added after removal of the leaching fluid.
12. (amended) The process of claim ~~9~~ 11 wherein the ~~microorganisms~~ bacteria, are added in a discharging fluid.
13. (amended) The process of claim 9 wherein, the total concentration of the one or more ~~one~~ sulfur-containing amino acids or amide or ester derivatives thereof is equal to or less than, ~~about~~ $8 \times 10^{-3}M$.
14. (amended) The process of claim 9 wherein the pH of the leaching fluid is between ~~greater than about 1 and less than about 4~~.
15. (amended) The process of claim 14, wherein the pH of the leaching fluid is about ~~between~~ 1.5 to 2.
16. (amended) The process of claim 9, wherein the ~~microorganisms~~ bacteria, are *Thiobacillus ferrooxidans*.
19. (amended) The process of claim 9, wherein the at least one sulfur-containing amino acid derivatives are ~~is either~~ an amide, an ester, or mixture thereof. ~~amides or esters~~.
20. (amended) The process of claim 13, wherein the total concentration of the sulfur-containing amino acids or amide or ester derivatives thereof is equal to or less than, ~~about~~ $8 \times 10^{-3}M$.

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21. (Amended) A process for microbial leaching of a sulfidic material, wherein the process comprises the steps of:

a) preparing an aqueous leaching fluid consisting of

~~comprising~~ at least one sulfur-containing amino acid ~~carbon-containing compound~~,
wherein the ~~at least one carbon-containing compound~~ is selected from the group
consisting of cysteine, methionine, and homocysteine, and amides and
estersthereof derivatives thereof,

and optionally, bacteria of the genus *Thiobacillus*,

and optionally one or more salts;

b) contacting said aqueous leaching fluid with the sulfidic material for a period of time
sufficient to achieve leaching.